



# City of Abilene's Planned Discharge in Possum Kingdom

- Originally Authorized Discharge Permit by TCEQ in 2018.
- Coming up for Renewal this year (September).
- Plan is to Dispose of RO Waste Product Into Cedar Creek Arm of PK.
- Water Quality Model called CORMIX used to justify the project.
- Indications are the Abilene Plans to Only Use Facility During Droughts.



# Abilene's General Model Assumptions

- PK will be full all the time.
- Always some inflow into Cedar Creek arm of PK.
- The Total Dissolves Solids (TDS) of PK water assumed to be long term average TDS for PK.
- TDS of Waste Stream is 17,556 mg/l (sea water is ~35,000 mg/l).
- Discharge will be made in shallow water (~22 feet deep when PK is full).
- Project's Diffuser Will be Able to Mix Effluent into Water Stored in PK.

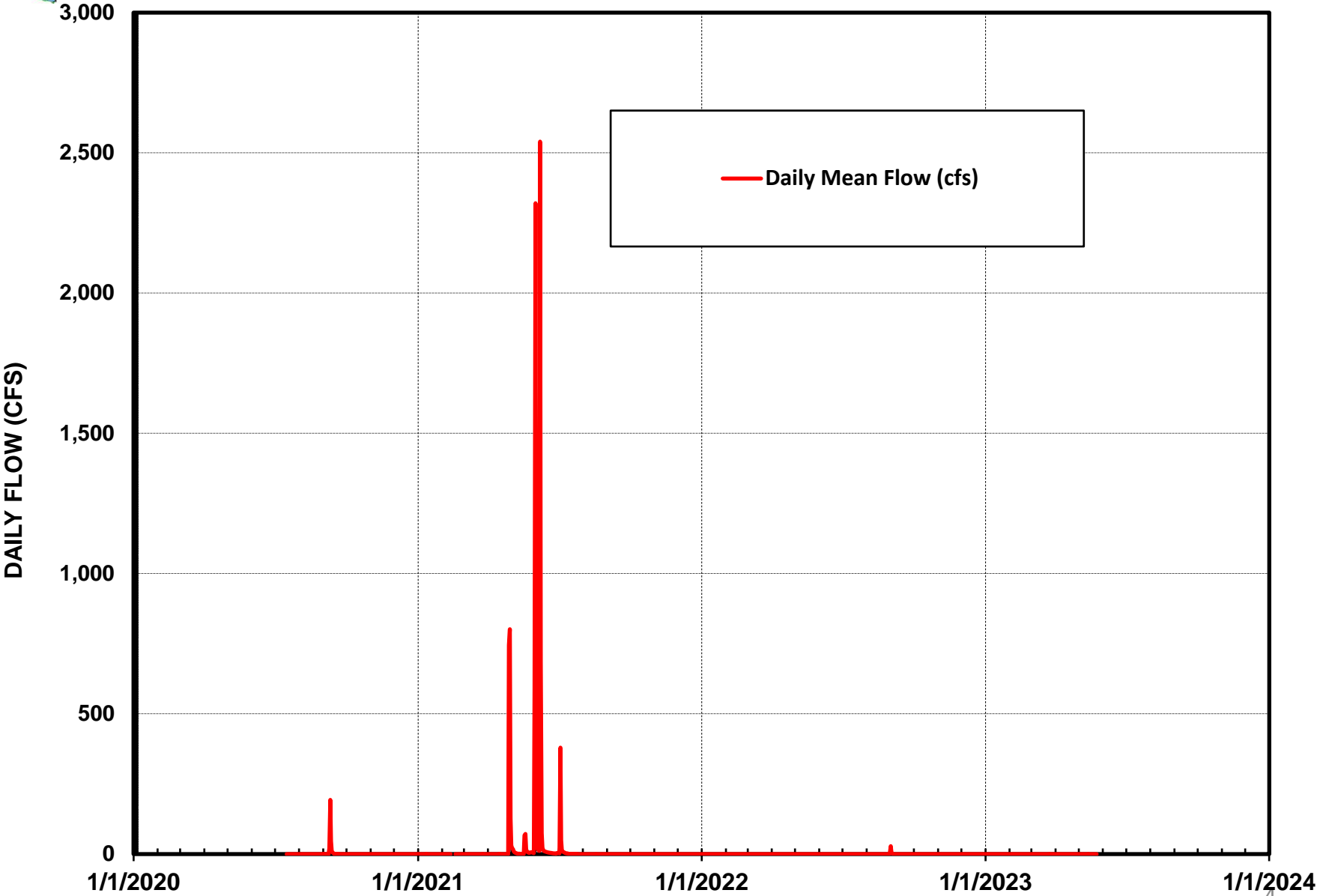


# New Information Since Permit Issued in 2018.

- Streamflow gage was installed on Cedar Creek in July 2020 (~measures flow from ~72% of total watershed area).
- Of the 1,038 days observed since, 85% of the days were zero.
- 78% of the zero flow days were consecutive.
- Max period of consecutive zero flow days was 227 days (8/20/21 through 4/3/2022).
- 5 events occurred with flow GT 10 cfs for more than 1 day.



# USGS 08088470 Cedar Ck at FM 3253 nr Caddo, TX Daily Mean Flow (cfs)





Distribution of Daily Flow Within Each of Month of Available Period of Record (July 2020 to Current)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Month	Year	# of days in month with data available	Max # of Days with Cons. Zero Flow (1)	Equal to 0	GT 0 and LTE 1	GT 1 and LTE 5	GT 5 and LTE 10	GT 10 and LTE 25	GT 25 and LTE 50	GT 50 and LTE 100	GT 100 and LTE 300	GT 300 and LTE 500	GT 500 and LTE 1,000	GT 1,000 and LTE 2,500	GT 2,500 and LTE 3,000 (2)	
(1)	7	2020	16	16	16	0	0	0	0	0	0	0	0	0	0	0
(2)	8	2020	31	31	31	0	0	0	0	0	0	0	0	0	0	0
(3)	9	2020	30	6	11	13	1	1	2	1	0	1	0	0	0	0
(4)	10	2020	31	31	31	0	0	0	0	0	0	0	0	0	0	0
(5)	11	2020	30	30	30	0	0	0	0	0	0	0	0	0	0	0
(6)	12	2020	31	31	31	0	0	0	0	0	0	0	0	0	0	0
(7)	1	2021	31	9	18	13	0	0	0	0	0	0	0	0	0	0
(8)	2	2021	23	11	21	2	0	0	0	0	0	0	0	0	0	0
(9)	3	2021	31	13	19	12	0	0	0	0	0	0	0	0	0	0
(10)	4	2021	30	14	22	5	0	0	0	0	1	0	2	0	0	0
(11)	5	2021	31	0	0	7	10	6	4	1	2	0	0	1	0	0
(12)	6	2021	30	0	0	0	12	6	6	1	2	0	0	1	1	1
(13)	7	2021	31	4	4	14	7	3	1	0	0	1	0	0	0	0
(14)	8	2021	31	17	29	2	0	0	0	0	0	0	0	0	0	0
(15)	9	2021	30	30	30	0	0	0	0	0	0	0	0	0	0	0
(16)	10	2021	31	31	31	0	0	0	0	0	0	0	0	0	0	0
(17)	11	2021	30	30	30	0	0	0	0	0	0	0	0	0	0	0
(18)	12	2021	31	31	31	0	0	0	0	0	0	0	0	0	0	0
(19)	1	2022	31	31	31	0	0	0	0	0	0	0	0	0	0	0
(20)	2	2022	28	28	28	0	0	0	0	0	0	0	0	0	0	0
(21)	3	2022	31	31	31	0	0	0	0	0	0	0	0	0	0	0
(22)	4	2022	30	25	28	2	0	0	0	0	0	0	0	0	0	0
(23)	5	2022	31	31	31	0	0	0	0	0	0	0	0	0	0	0
(24)	6	2022	30	30	30	0	0	0	0	0	0	0	0	0	0	0
(25)	7	2022	31	31	31	0	0	0	0	0	0	0	0	0	0	0
(26)	8	2022	31	30	30	0	1	0	0	0	0	0	0	0	0	0
(27)	9	2022	30	24	24	3	1	1	0	1	0	0	0	0	0	0
(28)	10	2022	31	31	31	0	0	0	0	0	0	0	0	0	0	0
(29)	11	2022	30	30	30	0	0	0	0	0	0	0	0	0	0	0
(30)	12	2022	31	31	31	0	0	0	0	0	0	0	0	0	0	0
(31)	1	2023	31	31	31	0	0	0	0	0	0	0	0	0	0	0
(32)	2	2023	28	28	28	0	0	0	0	0	0	0	0	0	0	0
(33)	3	2023	31	23	29	2	0	0	0	0	0	0	0	0	0	0
(34)	4	2023	30	30	30	0	0	0	0	0	0	0	0	0	0	0
(35)	5	2023	24	12	22	2	0	0	0	0	0	0	0	0	0	0
(36)	% Time Period of Record Daily Mean Flow Falls into the Various Bins		1038	78.23%	84.87%	7.42%	3.08%	1.64%	1.25%	0.48%	0.39%	0.19%	0.10%	0.39%	0.10%	0.10%
(37)	Cumulative % of Time Daily Mean Flow is Less than or Equal to the Max Bin Value in Columns 6 through 16					92.3%	95.4%	97.0%	98.3%	98.7%	99.1%	99.3%	99.4%	99.8%	99.9%	100.0%

Months in which the daily observed flow was missing for some days within month, or incomplete month of the period of record (beginning or end of record).

(1) The maximum number of consecutive days with zero flow was 227 days, the period August 20, 2021 through April 3, 2022.

(2) The maximum flow for the period of record (7/17/2020 through 5/24/2023) was 2,539 cfs on 6/7/2021.

